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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/997,168	11/29/2001	John Frederick Porter	D1815-00053	4547

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EXAMINER	
TORRES VELAZQUEZ, NORCA LIZ	
ART UNIT	**PAPER NUMBER**
1771	

DATE MAILED: 11/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/997,168	PORTER, JOHN FREDERICK	
	Examiner	Art Unit	
	Norca L. Torres-Velazquez	1771	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 October 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,7-23 and 25-29* is/are pending in the application.

4a) Of the above claim(s) *12-23 and 25* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,7-11 and 26-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 November 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 06, 2005 has been entered.

2. Applicant's arguments filed with regards to the prior art cited by the Examiner in the previous office action have been fully considered but they are not persuasive.

a. Applicants have amended the independent claims to include the limitation "wherein said fiber-containing core layer comprises poorly wetted or weakly bonded fibers"; and argue that the primary references of SPIELAU and KRAUSE, along with the combination of WESTRE and FELL, fail to disclose, teach or suggest such limitation. Applicants argue that SPIELAU discloses a core layer that is impregnated with resin and that the KRAUSE patent discloses fibers that are dispersed/incorporated within the associated resin matrix, and thus fail to disclose, teach or suggest providing a core layer of poorly wetted or weakly bonded fibers.

It is noted herein that the Specification of the present invention provides support for a core composed of lower modulus, higher elongation fibers, poorly wetted or weakly bonded high modulus fibers, in the form of yarn, roving, tow, woven fabric, non-woven fabric, or combinations thereof. [0012] The Specification fails to define what is meant by "poorly wetted or weakly bonded". Further, the disclosure teaches "high modulus

fibers" such as glass, carbon, boron and aramid fibers. (Original claim 14) Therefore, it is the Examiner's position that the claimed limitation of "poorly wetted or weakly bonded fibers" is not fully enabled by the disclosure since the Specification provides enablement for "poorly wetted or weakly **bonded high modulus fibers**"; which is more specific than the claimed "*bonded fibers*". Further, the "poorly wetted or weakly bonded" language raises indefiniteness issues since the Specification does not provide a definition or does not specify what is meant by these terms.

With regards to the arguments indicating that the prior art of record does not meet such limitation because the prior art teaches impregnation and/or incorporation of the fibers in a resin matrix, it is noted herein that the wet-ability of a fiber relates to the composition of the fiber and the surface tension of the fiber in the presence of a particular resin or solvent. An impregnated fabric is a fabric in which the interstices between the yarns are completely filled with the impregnating compound throughout the thickness of the material. Impregnation is not directly associated to the ability of the impregnating compound to wet the fibers. It is the Examiner's position that the prior art of record teaches similar materials in the fiber-containing core and that the claims as written do not preclude having impregnation material in the core layer.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1- are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a core composed of lower modulus, higher elongation fibers, poorly wetted or weakly bonded high modulus fibers, does not reasonably provide enablement for a fiber-containing core layer comprising "poorly wetted or weakly bonded fibers". The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. The disclosure enables for very specific type of fibers versus the claims that are directly to a broader type of fibers.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

6. Claims 1- are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is not clear from the claims or disclosure of what is meant by the terms "*poorly* wetted or *weakly* bonded". There are no parameters that indicate what is considered "poorly" or "weakly". Further, the Specification is not clear as to what material is used for "wetting" the fiber-containing core layer to provide the claimed "poorly wetted" fibers.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claim 8, 26, 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over SPIELAU (US 4,550,051) in view of WESTRE et al. (EP 0783960 A2).

SPIELAU et al. discloses a laminate or multilayered composite structure based on epoxy resin that provides the advantages of the glass-fiber reinforced epoxy resin laminates, such as high flexural strength, surface resistance, among others. (Column 2, lines 10-17) The reference discloses that one drawback of glass-reinforced epoxy resin laminates is poor drilling and punching and cutting capacity. (Column 2, lines 10-22) The reference teaches a laminate construction constituting a bonded multilayered composite of resin-impregnated outer plies, containing a substrate of glass fibers with resin-impregnated core plies containing flat textile forms of synthetic thermoplastic fibers. (Column 2, lines 32-37) The reference teaches materials for the fibers of thermoplastic synthetic resins for the core plies that read on the present application. (Column 3, lines 19-54) In their drawings, the reference shows the laminate of their invention. With regards to the claimed toughness, tensile modulus, elongation at break, since Spielau employs the same materials, presumably it would possess the same properties. It is noted that SPIELAU teaches the use of core materials of synthetic thermoplastic fibers having a basis weight of about 100-400 g/m^2 that reads on the values claimed herein. (Refer to claim 1 and Col. 4, lines 27-30) With regards to the basis weight of the resin-impregnated fiber-containing layers, the reference teaches the use of substrates based on glass fibers that exhibit preferably a basis weigh of about 70-350 g/m^2. (Column 4, lines 17-22) It is the Examiner's position that the basis weight depends on the intended properties needed. For example, when the basis weight is increased, a thicker and stronger material is produced. Therefore, since Applicant's have not shown criticality to a basis weight being at least 400 g/m^2, this limitation is

recognized as result effective variable in this field of endeavor and it has been held that discovering optimum values would have been or result effective variables involves only routine experimentation. It is noted that the SPIELAU reference teaches the multi-layered composite of the present invention and that it is known to attach such composites in the printed circuits art to substrates such as metals and plastic in computer casings by the use of screws.

While SPIELAU is directed to composites that are attached to substrates, the reference is silent to their use in "structural" joint applications.

WESTRE et al. provides a hybrid laminate and skin panels of hybrid laminate structure that are suitable for a supersonic civilian aircraft. (Abstract) The reference teaches using such laminates structures in the form of aircraft outer skin panels forming joints with high open-hole tensile and compressive strengths and the use of fasteners to attach them. (Page 3, lines 5-12)

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the composite and use it in "structural" applications with the motivation of producing joints with high open-hole tensile and compressive strengths that are suitable for structural joints such as those in aircraft applications as disclosed by WESTRE et al. (above).

9. Claims 1-4, 9-11 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over SPIELAU (US 4,550,051) and WESTRE et al. (EP 0783960 A2), and further in view of FELL (US 5,316,604).

SPIELAU fails to teach the use of a polyolefin adhesive.

FELL relates to a composite/sandwich structure that comprises a core with facing sheets or skins laminated to the core with a thermoplastic film or layer. (Col. 1, lines 12-21) It is

noted that Fell uses a thermoset resin that is heated and compressed to bond. WESTRE et al. provides a hybrid laminate and skin panels of hybrid laminate structure that are suitable for a supersonic civilian aircraft. (Abstract) The reference teaches using such laminates structures in the form of aircraft outer skin panels forming joints with high open-hole tensile and compressive strengths and the use of fasteners to attach them. (Page 3, lines 5-12)

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use an adhesive film in the lamination of the facing sheets to the core motivated by the desire of strengthening the bonding of the layers and avoid delamination.

10. Claims 1-4, 7 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over KRAUSE (US 4,451,528) in view WESTRE et al. (EP 0783960 A2) and further in view of FELL (US 5,316,604).

KRAUSE discloses a composite fiber reinforced plastic member and its method of manufacture to provide a high-strength lightweight part particularly suitable for use as a structural component. The composite member comprises a body or web comprised of a glass fiber reinforced thermosetting resin matrix having a carbonized fiber reinforced compatible resin. (Abstract) The reference teaches the use of components fabricated from reinforced synthetic resins in the aircraft, automotive, leisure products and industrial equipment industries. (Column 1, lines 11-14) The reference teaches that in order to increase the strength of the prior art's fiberglass reinforced plastic components; they proposed to mix higher strength fibers or filaments with the glass fibers or glass filaments effecting a further reinforcement thereof. Fibers such as carbonized fibers, boron fibers, steel fibers, asbestos fibers, and the like, have been suggested, of which highly carbonized or graphitized fibers are particularly suitable because of

their exceedingly high-strength. (Column 1, lines 26-56) The reference teaches the use of layers or strata of graphite fiber reinforced layers sandwiched between two overlying glass fiber containing resin matrices to achieve the requisite reinforcement as the case may be. (Column 5, line 63 through Column 6, line 3). It is the Examiner's interpretation that this teaching equates to the laminate comprising a pair of composite layers containing a resin-impregnated glass fabric or mat and a core layer laminated between the pair of composite layers. With regards to the claimed toughness, high modulus and low modulus materials, it is noted that the Krause reference teaches the same material and the same structure so that it would have to have the same properties. With regards to claim 7, it is noted that the reference teaches mixing high strength fibers or filaments with the glass fibers or glass filaments effecting a further reinforcement in the reinforced plastic components. (Above)

KRAUSE is silent to the use of the composite in "structural" joint applications and to the use of a polyolefin adhesive.

FELL relates to a composite/sandwich structure that comprises a core with facing sheets or skins laminated to the core with a thermoplastic film or layer. (Col. 1, lines 12-21)

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the composite and use it in "structural" applications with the motivation of producing joints with high open-hole tensile and compressive strengths that are suitable for structural joints such as those in aircraft applications as disclosed by WESTRE et al. (above). It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use an adhesive film such as the one taught by FELL for lamination of

the facing sheets to the core motivated by the desire of strengthening the bonding of the layers and avoid delamination.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Norca L. Torres-Velazquez whose telephone number is 571-272-1484. The examiner can normally be reached on Monday-Thursday 8:00-5:00 pm and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on 571-272-1478. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Norca L. Torres-Velazquez
Primary Examiner
Art Unit 1771

October 27, 2005